

SEQUENCE LISTING

<110> Japan as Represented by Secretary of Agency of Industrial Science and Technology

<120> Sulphur Free Enzyme

<130> PH-911-PCT

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<150> JP99/183664

<151> 29-JUN-1999

<160> 10

<170> PatentIn Ver. 2.0

<210> 1

<211> 159

<212> PRT

<213> E. coli

<400> 1

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Met Glu Asn Ala Met Pro Trp Asn Leu Pro Ala Asp Leu Ala Trp

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Phe Lys Arg Asn Thr Leu Asn Lys Pro Val Ile Met Gly Arg His

35 40 45

Thr Trp Glu Ser Ile Gly Arg Pro Leu Pro Gly Arg Lys Asn Ile

50 55 60

Ile Leu Ser Ser Gln Pro Gly Thr Asp Asp Arg Val Thr Trp Val

65 70 75

Lys Ser Val Asp Glu Ala Ile Ala Ala Gly Asp Val Pro Glu

80 85 90

Ile Met Val Ile Gly Gly Gly Arg Val Tyr Glu Gln Phe Leu Pro  
95 100 105  
Lys Ala Gln Lys Leu Tyr Leu Thr His Ile Asp Ala Glu Val Glu  
110 115 120  
Gly Asp Thr His Phe Pro Asp Tyr Glu Pro Asp Asp Trp Glu Ser  
125 130 135  
Val Phe Ser Glu Phe His Asp Ala Asp Ala Gln Asn Ser His Ser  
140 145 150  
Tyr Ser Phe Glu Ile Leu Glu Arg Arg  
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<211> 566

<212> DNA

<213> E. coli

<221> CDS

<222> (81)... (557)

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<210> 3

<211> 185

<212> PRT

<213> B. subtilis

<400> 3

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Val	Asn	Ala	Val	Asn	Gly	Ser	Gly	Gly	Asn	Tyr	Ser	Val	Asn	Trp
					20				25					30
Ser	Asn	Thr	Gly	Asn	Phe	Val	Val	Gly	Lys	Gly	Trp	Thr	Thr	Gly
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Ser	Pro	Phe	Arg	Thr	Ile	Asn	Tyr	Asn	Ala	Gly	Val	Trp	Ala	Pro
					50				55					60
Asn	Gly	Asn	Gly	Tyr	Leu	Thr	Leu	Tyr	Gly	Trp	Thr	Arg	Ser	Pro
					65				70					75
Leu	Ile	Glu	Tyr	Tyr	Val	Val	Asp	Ser	Trp	Gly	Thr	Tyr	Arg	Pro
					80				85					90
Thr	Gly	Thr	Tyr	Lys	Gly	Thr	Val	Lys	Ser	Asp	Gly	Gly	Thr	Tyr
					95				100					105
Asp	Ile	Tyr	Thr	Thr	Arg	Tyr	Asn	Ala	Pro	Ser	Ile	Asp	Gly	
					110				115					120
Asp	Arg	Thr	Thr	Phe	Thr	Gln	Tyr	Trp	Ser	Val	Arg	Gln	Ser	Lys
					125				130					135
Arg	Pro	Thr	Gly	Ser	Asn	Ala	Thr	Ile	Thr	Phe	Ser	Asn	His	Val
					140				145					150
Asn	Ala	Trp	Lys	Ser	His	Gly	Met	Asn	Leu	Gly	Ser	Asn	Trp	Ala
					155				160					165
Tyr	Gln	Val	Met	Ala	Thr	Glu	Gly	Tyr	Gln	Ser	Ser	Gly	Ser	Ser
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Asn Val Thr Val Trp

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211 558

<212> DNA

<213> B. subtilis

<221> CDS

<222> (1) . . . (555)

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ggttggacta caggttcgcc atttaggacg ataaactata atgccggagt ttggcgccg  
aatggcaatg gatatttaac ttatataatgtt tggacgagat cacctctcat agaatattat  
gtatggatt catgggtac ttatagacct actggAACgt ataaaggta tggaaaaagt  
gatggggta catatgacat atatacaact acacgttata acgcacccatc cattgatggc  
gatcgacta ctttacgca gtactggagt gttcgccagt cgaagagacc aaccggaagc  
aacgctacaa tcactttcag caatcatgtg aacgcatttgg agagccatgg aatgaatctg  
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〈210〉 5

〈211〉 159

<212> PRT

<213> E. coli

<400> 5

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Ala Ile Ser Leu Ile Ala Ala Leu Ala Val Asp Arg Val Ile Gly

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5

10

15

Asn Glu Asn Ala Leu Pro Trp Asn Leu Pro Ala Asp Leu Ala Trp

20	25	30
Phe Lys Arg Asn Thr Leu Asn Lys Pro Val Ile Tyr Gly Arg His		
35	40	45
Thr Trp Glu Ser Ile Gly Arg Pro Leu Pro Gly Arg Lys Asn Ile		
50	55	60
Ile Leu Ser Ser Gln Pro Gly Thr Asp Asp Arg Val Thr Trp Val		
65	70	75
Lys Ser Val Asp Glu Ala Ile Ala Ala Gly Asp Val Pro Glu		
80	85	90
Ile Phe Val Ile Gly Gly Arg Val Tyr Glu Gln Phe Leu Pro		
95	100	105
Lys Ala Gln Lys Leu Tyr Leu Thr His Ile Asp Ala Glu Val Glu		
110	115	120
Gly Asp Thr His Phe Pro Asp Tyr Glu Pro Asp Asp Trp Glu Ser		
125	130	135
Val Phe Ser Glu Phe His Asp Ala Asp Ala Gln Asn Ser His Ser		
140	145	150
Tyr Ser Phe Glu Ile Leu Glu Arg Arg		
155		

<210> 6

<211> 569

<212> DNA

<213> E. coli

<221> CDS

<222> (81)...(560)

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ctttggcccg ccgcaaaaat attatcctca gcagtcacc cgggaccgat gatcggttaa  
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<210> 7

<211> 353

<212> PRT

〈213〉

<400> 7

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Asn	Glu	Asn	Ala	Leu	Pro	Trp	Asn	Leu	Pro	Ala	Asp	Leu	Ala	Trp
					20				25				30	
Phe	Lys	Arg	Asn	Thr	Leu	Asn	Lys	Pro	Val	Ile	Tyr	Gly	Arg	His
						35			40				45	
Thr	Trp	Glu	Ser	Ile	Gly	Arg	Pro	Leu	Pro	Gly	Arg	Lys	Asn	Ile
						50			55				60	
Ile	Leu	Ser	Ser	Gln	Pro	Gly	Thr	Asp	Asp	Arg	Val	Thr	Trp	Val
					65				70				75	
Lys	Ser	Val	Asp	Glu	Ala	Ile	Ala	Ala	Gly	Asp	Val	Pro	Glu	
						80			85				90	
Ile	Phe	Val	Ile	Gly	Gly	Gly	Arg	Val	Tyr	Glu	Gln	Phe	Leu	Pro
							95			100				105
Lys	Ala	Gln	Lys	Leu	Tyr	Leu	Thr	His	Ile	Asp	Ala	Glu	Val	Glu

110	115	120
Gly Asp Thr His Phe Pro Asp Tyr Glu Pro Asp Asp Trp Glu Ser		
125	130	135
Val Phe Ser Glu Phe His Asp Ala Asp Ala Gln Asn Ser His Ser		
140	145	150
Tyr Ser Phe Glu Ile Leu Glu Arg Arg Gly Gly Gly Ser Gly		
155	160	165
Gly Gly Gly Ala Ser Thr Asp Tyr Trp Gln Asn Trp Thr Asp Gly		
170	175	180
Gly Gly Ile Val Asn Ala Val Asn Gly Ser Gly Gly Asn Tyr Ser		
185	190	195
Val Asn Trp Ser Asn Thr Gly Asn Phe Val Val Gly Lys Gly Trp		
200	205	210
Thr Thr Gly Ser Pro Phe Arg Thr Ile Asn Tyr Asn Ala Gly Val		
215	220	225
Trp Ala Pro Asn Gly Asn Gly Tyr Leu Thr Leu Tyr Gly Trp Thr		
230	235	240
Arg Ser Pro Leu Ile Glu Tyr Tyr Val Val Asp Ser Trp Gly Thr		
245	250	255
Tyr Arg Pro Thr Gly Thr Tyr Lys Gly Thr Val Lys Ser Asp Gly		
260	265	270
Gly Thr Tyr Asp Ile Tyr Thr Thr Arg Tyr Asn Ala Pro Ser		
275	280	285
Ile Asp Gly Asp Arg Thr Thr Phe Thr Gln Tyr Trp Ser Val Arg		
290	295	300
Gln Ser Lys Arg Pro Thr Gly Ser Asn Ala Thr Ile Thr Phe Ser		
305	310	315
Asn His Val Asn Ala Trp Lys Ser His Gly Met Asn Leu Gly Ser		
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Asn Trp Ala Tyr Gln Val Met Ala Thr Glu Gly Tyr Gln Ser Ser

335

340

345

Gly Ser Ser Asn Val Thr Val Trp

350

<210> 8

<211> 1153

<212> DNA

<213>

<400> 8

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gcaacaccctt aaataaaccctt gtgatttacg ggcgccatac ctgggaatca atcggttaggc  
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<210> 9

<211> 353

<212> PRT

<213>

<400> 9

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Asn	Glu	Asn	Ala	Leu	Pro	Trp	Asn	Leu	Pro	Ala	Asp	Leu	Ala	Trp
				20				25					30	
Phe	Lys	Arg	Asn	Thr	Leu	Asn	Lys	Pro	Val	Ile	Tyr	Gly	Arg	His
				35				40					45	
Thr	Trp	Glu	Ser	Ile	Gly	Arg	Pro	Leu	Pro	Gly	Arg	Lys	Asn	Ile
				50				55					60	
Ile	Leu	Ser	Ser	Gln	Pro	Gly	Thr	Asp	Asp	Arg	Val	Thr	Trp	Val
				65				70					75	
Lys	Ser	Val	Asp	Glu	Ala	Ile	Ala	Ala	Gly	Asp	Val	Pro	Glu	
				80				85					90	
Ile	Phe	Val	Ile	Gly	Gly	Gly	Arg	Val	Tyr	Glu	Gln	Phe	Leu	Pro
				95				100					105	
Lys	Ala	Gln	Lys	Leu	Tyr	Leu	Thr	His	Ile	Asp	Ala	Glu	Val	Glu
				110				115					120	
Gly	Asp	Thr	His	Phe	Pro	Asp	Tyr	Glu	Pro	Asp	Asp	Trp	Glu	Ser
				125				130					135	
Val	Phe	Ser	Glu	Phe	His	Asp	Ala	Asp	Ala	Gln	Asn	Ser	His	Ser
				140				145					150	
Tyr	Ser	Phe	Glu	Ile	Leu	Glu	Arg	Arg	Gly	Gly	Gly	Ser	Gly	
				155				160					165	

Gly Gly Gly Ala Ser Thr Asp Tyr Trp Gln Asn Trp Thr Asp Gly  
170 175 180  
Gly Gly Ile Val Asn Ala Val Asn Gly Ser Gly Gly Asn Tyr Ser  
185 190 195  
Val Asn Trp Ser Asn Thr Gly Asn Phe Val Val Gly Lys Gly Trp  
200 205 210  
Thr Thr Gly Ser Pro Phe Arg Thr Ile Asn Tyr Asn Ala Gly Val  
215 220 225  
Trp Ala Pro Asn Gly Asn Gly Tyr Leu Thr Leu Tyr Gly Trp Thr  
230 235 240  
Arg Ser Pro Leu Ile Glu Tyr Tyr Val Val Asp Ser Trp Gly Thr  
245 250 255  
Tyr Arg Pro Thr Gly Thr Tyr Lys Gly Thr Val Lys Ser Asp Gly  
260 265 270  
Gly Thr Tyr Asp Ile Tyr Thr Thr Arg Tyr Asn Ala Pro Ser  
275 280 285  
Ile Asp Gly Asp Arg Thr Thr Phe Thr Gln Tyr Trp Ser Val Arg  
290 295 300  
Gln Ser Lys Arg Pro Thr Gly Ser Asn Ala Thr Ile Thr Phe Ser  
305 310 315  
Asn His Val Asn Ala Trp Lys Ser His Gly Leu Asn Leu Gly Ser  
320 325 330  
Asn Trp Ala Tyr Gln Val Ile Ala Thr Glu Gly Tyr Gln Ser Ser  
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Gly Ser Ser Asn Val Thr Val Trp  
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<210> 10

<211> 1153

<212> DNA

<213>

<400>10

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